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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/604,136	06/27/2003	Jeffrey P. Gambino	BUR920020125US1	1135
30449	7590	06/21/2005	EXAMINER	
SCHMEISER, OLSEN + WATTS			AHMED, SHAMIM	
3 LEAR JET LANE			ART UNIT	
SUITE 201			PAPER NUMBER	
LATHAM, NY 12110			1765	

DATE MAILED: 06/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/604,136

Applicant(s)

GAMBINO ET AL.

Examiner

Shamim Ahmed

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 11 April 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 13-16 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12 and 17-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election with traverse of Group I, claims 1-12 and 17-20, in the reply filed on 4/11/05 is acknowledged. The traversal is on the ground(s) that searching and examination of the entire application would have been done without serious burden. This is not found persuasive because the inventions are distinct as discussed in the earlier communication and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

The requirement is still deemed proper and is therefore made FINAL.

### ***Claim Rejections - 35 USC § 112***

2. Claim 6 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

3. Claim 6 contains the trademark/trade names of "SILK, Teflon, parylene-N, parylene-F, Flare". Where a trademark or trade name is used in a claim as a limitation to identify or describe a particular material or product, the claim does not comply with the requirements of 35 U.S.C. 112, second paragraph. See *Ex parte Simpson*, 218 USPQ 1020 (Bd. App. 1982). The claim scope is uncertain since the trademark or trade name cannot be used properly to identify any particular material or product. A trademark or trade name is used to identify a source of goods, and not the goods themselves. Thus, a trademark or trade name does not identify or describe the goods associated with the trademark or trade name. In the present case, the trademark/trade

name is used to identify/describe the dielectric material and, accordingly, the identification/description is indefinite.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-2 and 17-18 are rejected under 35 U.S.C. 102(b) as being anticipated by Matumoto (5,893,749).

Matumoto discloses a process of forming interconnect wiring structure, wherein providing a first layer of insulating film (13), which resemble as the claimed first layer and forming a second layer (14,15) on a surface of the first layer (col.4, lines 43-55 and figure 3A).

Matumoto also discloses that creating a recess or hole (13A) in the first layer in the region where the second layer is not covering the first layer (col.4, line 66-col.5, line 6 and see figure 3C).

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6. Claims 1-2,4-6 and 17-20 are rejected under 35 U.S.C. 102(e) as being anticipated by Ho et al (US 2002/0108929).

Ho et al disclose an etching process for low-k dielectric material such as SILK using reducing plasma of ammonia ( $\text{NH}_3$ ), wherein the low-k dielectric material layer (14) resembles as the claimed first layer and a hard masking layer (12), resembles as the claimed second layer is provided on the first layer (see paragraphs 0032 and 0047).

Ho et al also teach that the first layer is etched to form a recess in the first layer in the region where the hard mask layer is not covering the first layer (paragraph 0047 and see also figures 2a-2b).

Ho et al inherently teach that the selective etching of the low dielectric material layer is performed by a reducing plasma process because the etchant gas is free of oxygen as exactly same as the instant invention.

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

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not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ho et al (US 2002/0108929) in view of Demmin et al (6,635,185).

Ho et al discuss above in the paragraph 6 but fail to teach changing the claimed process conditions to alter the depth of the recess.

However, Demmin teaches, beginning at col.7, line 15:

As is well known, there are many operating conditions of a plasma etching process that can have an effect on the results obtained. These conditions include, for example, the type of plasma etching (for example, reactive ion etching, plasma etching, and high-density etching), etching composition flow rate, wafer temperature, pressure, power, time, and bias. The interrelationship of these parameters is a function of the hardware configuration and the material being etched. One skilled in the art of plasma etching and cleaning can vary these parameters accordingly to etch a desired material satisfactorily. Exemplary operating condi-

Therefore, It would have been obvious to one with ordinary skill in the art to alter the depth of the recess because Demmin teaches that operating conditions of a plasma etching process that can effect on the result obtained, wherein the conditions include, for example etching composition, flow rate, temperature etc., which appears to reflect a result-effective variable which can be optimized. See MPEP 2144.05 IIB.

10. Claims 7-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ho et al (US 2002/0108929) in view of Hsieh et al (US 2003/0109143).

Ho et al discuss above in the paragraph 6 and also teach that the process is related to form integrated circuits (paragraph 0006).

Ho et al fail to explicitly teach that forming conductive features after forming the contact opening or the recess formed on the dielectric material.

However, it would have been obvious to one of ordinary skilled in the art at the time of claimed invention to form conductive features in order to efficiently complete the integrated circuits as shown in Hsieh et al (US 2003/0109143).

Hsieh et al disclose a process of forming multi-level interconnect structure, wherein a low dielectric material (410) is provided over a conductor region (402) and the dielectric material layer is etched to form a recess using a mask pattern (412) in order to form a contact opening to be fill with a liner and filled with metal typically copper and these features have become well known in metallization of small features in advanced integrated circuits (paragraphs 0044-0048 and 0052).

### ***Conclusion***

11. The prior art made of record listed in PTO-892 and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shamim Ahmed whose telephone number is (571) 272-1457. The examiner can normally be reached on M-Thu (7:00-5:30) Every Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine G. Norton can be reached on (571) 272-1465. The fax phone

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number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Shamim Ahmed  
Primary Examiner  
Art Unit 1765

SA  
June 16, 2005